

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for isolating and purifying a nucleic acid, comprising the step of:

(1) contacting a sample solution containing nucleic acid to a solid phase to adsorb the nucleic acid onto the solid phase;

(2) contacting a washing solution to the solid phase to wash the solid phase in such a state that the nucleic acid is adsorbed; and

(3) contacting an elution solution to the solid phase to desorb the nucleic acid,
wherein the sample solution containing nucleic acid is prepared by further addition and mixing of a pretreatment solution containing an antifoaming agent and a surface-active agent,

wherein the antifoaming agent is an alcohol-type antifoaming agent selected from at least one of the group consisting of: acetylene glycol, heptanol, and ethylhexanol and higher alcohols,

wherein the sample solution containing nucleic acid is prepared by further addition of a water-soluble organic solvent,

wherein the solid phase is a porous membrane having an average pore diameter of 0.1 to 10.0 μm .

2. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the sample solution containing nucleic acid is prepared by further addition and mixing of a pretreatment solution containing at least one selected from the group consisting of a nucleic acid stabilizer, a chaotropic salt, buffer and a protease.

3. (Cancelled)

4. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the antifoaming agent further comprises a silicon type antifoaming agent.

5. (Original) The method for isolating and purifying a nucleic acid according to claim 2, wherein the pretreatment solution contains the nucleic acid stabilizer in a concentration of 0.1 to 20% by mass.

6. (Original) The method for isolating and purifying a nucleic acid according to claim 2, wherein the nucleic acid stabilizer is a reducing agent.

7. (Original) The method for isolating and purifying a nucleic acid according to claim 6, wherein the reducing agent is a mercapto compound.

8. (Original) The method for isolating and purifying a nucleic acid according to claim 2, wherein the nucleic acid stabilizer is a chelating agent.

9. (Original) The method for isolating and purifying a nucleic acid according to claim 2, wherein the chaotropic agent is a guanidium salt.

10. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the water-soluble organic solvent contains at least one selected from the group consisting of methanol, ethanol, propanol and butanol.

11. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the solid phase is a solid phase containing silica or a derivative thereof, diatomaceous earth or alumina.

12. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the solid phase is a solid phase containing an organic macromolecule.

13. (Original) The method for isolating and purifying a nucleic acid according to claim 12, wherein the organic macromolecule is an organic macromolecule having a polysaccharide structure.

14. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 12, wherein the organic macromolecule is acetylcellulose.

15. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 12, wherein the organic macromolecule is an organic macromolecule where

acetylcellulose or a mixture of acetylcelluloses having different acetyl values is subjected to a saponification treatment.

16. (Original) The method for isolating and purifying a nucleic acid according to claim 15, wherein degree of saponification of the organic macromolecule prepared by a saponification treatment of the mixture of acetylcelluloses having different acetyl values is 5% or more.

17. (Original) The method for isolating and purifying a nucleic acid according to claim 15, wherein degree of saponification of the organic macromolecule prepared by a saponification treatment of the mixture of acetylcelluloses having different acetyl values is 10% or more.

18. (Original) The method for isolating and purifying a nucleic acid according to claim 12, wherein the organic macromolecule is a regenerated cellulose.

19. (Cancelled)

20. (Previously Presented) The method according to claim 11, wherein the porous membrane is a porous membrane, in which the front and back sides are asymmetric.

21. (Cancelled)

22. (Previously Presented) The method according to claim 11, wherein the porous membrane is a porous membrane having a thickness of 10 to 500 μm .

23-24. (Cancelled)

25. (Previously Presented) The method according to claim 11, wherein the solid phase is coated magnetic beads.

26. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the adsorption and desorption of nucleic acid are carried out using a cartridge for isolating and purifying a nucleic acid, which houses the solid phase in a container having at least two openings.

27. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the adsorption and desorption of nucleic acid are carried out using a unit for isolating and purifying a nucleic acid, which has:

- (a) the solid phase;
- (b) a container having at least two openings, which houses the solid phase; and
- (c) an apparatus for generating the pressure difference, which is connected to one of the openings of the container.

28. (Original) The method for isolating and purifying a nucleic acid according to claim 27, wherein the apparatus for generating the pressure difference is an apparatus for pressurization.

29. (Original) The method for isolating and purifying a nucleic acid according to claim 27, wherein the apparatus for generating the pressure difference is an apparatus for pressure reduction.

30. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 27, wherein the apparatus for generating the pressure difference is connected to one of the openings of the container in a freely detachable manner.

31. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 27, which comprises the step of:

(2a) preparing a sample solution containing nucleic acid from a sample and infusing the sample solution containing nucleic acid into one of the openings of the container housing the solid phase, the container having at least two openings;

(2b) making the inner area of the container into a pressurized state by using the apparatus for generating the pressure difference being connected to the one of the openings of the container and contacting the infused sample solution containing nucleic acid to the solid phase by discharging the sample solution from another opening of the container to adsorb nucleic acid onto the solid phase;

(2c) detaching the apparatus for generating the pressure difference from the one opening of the container and infusing a washing solution into the one opening of the container;

(2d) making the inner area of the container into a pressurized state by using the apparatus for generating the pressure difference being connected to one of the openings of the container and discharging the infused washing solution from another opening of the container to contact the washing solution to the solid phase to wash the solid phase;

(2e) detaching the apparatus for generating the pressure difference from the one opening of the container and infusing an elution solution into the one opening of the container; and

(2f) making the inner area of the container into a pressurized state by using the apparatus for generating the pressure difference being connected to the one of the openings of the container and discharging the infused elution solution from another opening of the container to desorb the adsorbed nucleic acid from the solid phase and discharge nucleic acid outside the container.

32. (Original) The method for isolating and purifying a nucleic acid according to claim 31, which comprises, before the step of (2e), (2d') contacting a solution of DNase to the solid phase and then washing the solid phase with the washing solution.

33. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the washing solution is a solution containing 20 to 100% by mass of methanol, ethanol, isopropanol or n-propanol.

34. (Previously Presented) The method for isolating and purifying a nucleic acid according to claim 1, wherein the elution solution is a solution having a salt concentration of not more than 0.5 mol/L.

35-36. (Cancelled)